

The listing of claims will replace all prior versions, and listings, of claims in the application:

**Listing of Claims:** Please amend the claims as follows

**We claim:**

**Claim 1. (Currently Amended)** A method for the characterization of ~~an a~~ histone deacetylase (HDAC) inhibitor or a potential HDAC inhibitor, wherein said HDAC inhibitor or potential HDAC inhibitor is a molecule which inhibits the enzymatic activity of said HDAC, comprising

determining in a sample the amount of a molecular marker which is HDAC protein, wherein the sample is derived from cells which have been treated with said HDAC inhibitor or potential HDAC inhibitor, and

wherein a change in the level(s) of said molecular marker in the presence of said HDAC inhibitor compared to the level of said molecular marker in the absence of said HDAC inhibitor indicates that said test compound is an HDAC inhibitor or a potential HDAC inhibitor.

**Claim 2. (Previously Presented)** A method according to claim 1 wherein the molecular marker is HDAC-2 protein.

**Claim 3. (Previously Presented)** A method according to claim 1 wherein the sample is derived from a tissue affected by a disorder.

**Claim 4. (Previously Presented)** A method according to claim 3 wherein the disorder is skin cancer, melanoma, estrogen receptor-dependent and independent breast cancer, ovarian cancer, prostate cancer, renal cancer, colon and colorectal cancer, pancreatic cancer, head and neck cancer, small cell and non-small cell lung carcinoma, leukemias and other types of blood cell cancer or an endocrine disease based on aberrant recruitment of histone deacetylase.

**Claim 5. (Withdrawn)** A method according to claim 1 wherein the molecular marker is a ribonucleic acid and the amount of the molecular marker is determined by RT-PCR.

**Claim 6. (Currently Amended)** A method according to claim 1 wherein the molecular marker is a protein and the amount of the molecular marker is determined by use of an antibody directed against the molecular marker.

**Claim 7. (Previously Presented)** A method according to claim 6 wherein the amount of molecular marker is determined by Western Blotting, ELISA, immunohistochemistry and/or flow cytometry.

**Claim 8. (Previously Presented)** A method according to claim 1 further comprising the step of selecting the inhibitor if it has the activity of modulating the expression of the molecular marker.

**Claim 9. (Previously Presented)** A method according to claim 1 further comprising the step of determining in a reference sample the amount of said molecular marker wherein the reference sample is derived from cells which have not been treated with said HDAC inhibitor or potential HDAC inhibitor.

**Claim 10. (Currently Amended)** A method for profiling histone deacetylase (HDAC) inhibitors or potential HDAC inhibitors, comprising

contacting a cell with an HDAC inhibitor or potential HDAC inhibitor; and  
determining the amount of a molecular marker which is HDAC protein in the presence and absence of said inhibitor; and  
creating a profile of said HDAC inhibitor or potential HDAC inhibitor based on its ability to down-regulate the expression of said molecular marker which is HDAC protein.

**Claim 11. (Previously Presented)** A method for diagnosing a disease associated with aberrant histone deacetylase (HDAC) activity, comprising

determining the amount of a molecular marker which is HDAC protein in a sample obtained from a subject suffering from said disease and  
comparing said amount of said molecular marker with a reference sample.

**Claim 12. (Currently Amended)** A method for determining the the prognosis/outcome of a treatment of a disorder associated with aberrant HDAC activity using an HDAC inhibitor, comprising

determining the amount of a molecular marker which is HDAC protein in a sample obtained from a subject suffering from said disorder with or without treatment with said HDAC inhibitor.

**Claim 13. (Previously Presented)** A method for determining the prognosis/outcome of a treatment of a disorder associated with aberrant HDAC activity employing a therapy that targets a molecular marker which is HDAC protein, comprising

determining the amount of said molecular marker in a sample obtained from a subject suffering from said disorder with or without said therapy.

**Claim 14. (Previously Presented)** The method according to claim 10 comprising employing an antibody directed against HDAC-2 protein.

**Claim 15. (Withdrawn)** The method according to claim 10 comprising employing an oligonucleotide which is capable of hybridizing to HDAC-2 cDNA or a complement thereof.

**Claim 16. (Withdrawn)** The method according to claim 15 wherein the oligonucleotide is used as a primer in a polymerase chain reaction or in a RT-PCR.

**Claim 17. (Withdrawn)** The method according to claim 15 wherein the oligonucleotide is used as a probe in a hybridization reaction.

**Claim 18. (Withdrawn)** A diagnostic kit comprising

- (i) means for determining the amount of a molecular marker which is HDAC protein and
- (ii) an HDAC inhibitor.

**Claim 19. (Withdrawn)** A diagnostic kit according to claim 18 wherein the means for determining the amount of a molecular marker is an antibody directed against a protein

selected from the group consisting of HDAC-2 protein, UBC8 protein, RLIM protein and TRAIL protein.

**Claim 20. (Withdrawn)** A diagnostic kit according to claim 18 wherein the means for determining the amount of a molecular marker is an oligonucleotide capable of hybridizing to a polynucleotide selected from the group consisting of RLIM mRNA, RLIM cDNA, Ubc8 mRNA, Ubc8 cDNA, TRAIL mRNA, TRAIL cDNA, HDAC-2 mRNA, HDAC-2 cDNA and complements thereof.

**Claim 21. (Previously Presented)** The method according to claim 3 wherein said disease endocrine disorder is thyroid resistance syndrome.

**Claim 22. (Currently Amended)** A method for the characterization of ~~an~~ a histone deacetylase (HDAC) inhibitor or a potential HDAC inhibitor, comprising  
contacting a cell with a test compound and  
measuring the level(s) of a molecular marker which is HDAC protein,  
wherein a ~~change~~ reduction in the level(s) of said molecular marker in the presence of said HDAC inhibitor compared to the level of said molecular marker in the absence of said HDAC inhibitor indicates that said test compound is an HDAC inhibitor or a potential HDAC inhibitor.

**Claim 23. (Cancelled)**

**Claim 24. (Previously Presented)** The method according to claim 11 wherein the disease is a proliferative disease, thyroid resistance syndrome, inflammatory disorder, diabetes, thalassemia, cirrhosis, protozoal infection, autoimmune disease, rheumatoid arthritis, rheumatoid spondylitis, rheumatism, osteoarthritis, gouty arthritis, multiple sclerosis, insulin dependent diabetes mellitus and non-insulin dependent diabetes, asthma, rhinitis, uveitis, lupus erythematois, ulcerative colitis, Morbus Crohn, inflammatory bowel disease, chronic inflammations, or chronic diarrhea.

**Claim 25. (Previously Presented)** The method according to claim 12 wherein the disease is a proliferative disease, thyroid resistance syndrome, inflammatory disorder, diabetes, thalassemia,

cirrhosis, protozoal infection, autoimmune disease, rheumatoid arthritis, rheumatoid spondylitis, rheumatism, osteoarthritis, gouty arthritis, multiple sclerosis, insulin dependent diabetes mellitus and non-insulin dependent diabetes, asthma, rhinitis, uveitis, lupus erythematois, ulcerative colitis, Morbus Crohn, inflammatory bowel disease, chronic inflammations, or chronic diarrhea.

**Claim 26. (Previously Presented)** The method according to claim 13 wherein the disease is a proliferative disease, thyroid resistance syndrome, inflammatory disorder, diabetes, thalassemia, cirrhosis, protozoal infection, autoimmune disease, rheumatoid arthritis, rheumatoid spondylitis, rheumatism, osteoarthritis, gouty arthritis, multiple sclerosis, insulin dependent diabetes mellitus and non-insulin dependent diabetes, asthma, rhinitis, uveitis, lupus erythematois, ulcerative colitis, Morbus Crohn, inflammatory bowel disease, chronic inflammations, or chronic diarrhea.

**Claim 27. (Previously Presented)** The method according to claim 40 11 wherein the disease is cancer.

**Claim 28. (Currently Amended)** The method according to claim 1 wherein the HDAC inhibitor or potential HDAC inhibitor interferes with the ~~catalytic~~ enzymatic activity of said HDAC.